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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/610,931	07/02/2003	Naoki Ide	239741US6	2547
22850	7590	05/01/2007		
OBLON, SPIVAK, MCCLELLAND, MAIER & NEUSTADT, P.C. 1940 DUKE STREET ALEXANDRIA, VA 22314			EXAMINER TORRES, JUAN A	
			ART UNIT	PAPER NUMBER
			2611	
SHORTENED STATUTORY PERIOD OF RESPONSE		NOTIFICATION DATE	DELIVERY MODE	
2 MONTHS		05/01/2007	ELECTRONIC	

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Notice of this Office communication was sent electronically on the above-indicated "Notification Date" and has a shortened statutory period for reply of 2 MONTHS from 05/01/2007.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No. 10/610,931	Applicant(s) IDE, NAOKI	
	Examiner Juan A. Torres	Art Unit 2611	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 2 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 29 January 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☒ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-4, 6-24 and 26-40 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1-4, 6, 10-24, 26 and 30-40 is/are allowed.
- 6) ☐ Claim(s) _____ is/are rejected.
- 7) ☒ Claim(s) 7-9 and 27-29 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 02 July 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Priority

Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Drawings

The modifications to the specification were received on 01/29/2007. These modifications are accepted by the Examiner.

In view of the amendment filed on 01/29/2007, the Examiner withdraws drawings objections of the previous Office action.

The drawings are objected to because:

a) Figures 12, 13A and 13B should be designated by a legend such as --Prior Art-- because only that which is old is illustrated (see specification pages 4 to 6). See MPEP § 608.02(g); and

b) The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference character(s) not mentioned in the description: "8" (see figure 8).

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet,

and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Objections

The modifications to the claims were received on 01/29/2007. These modifications are accepted by the Examiner.

In view of the amendment filed on 01/29/2007, the Examiner withdraws claims objections to claims 7-9, 27-29, 19, 20, 39 and 40 of the previous Office action.

Claim 7 is objected to because of the following informalities: in lines 1-2 the recitation "the first metric and the second metric is the square" is improper because is not properly constructed; it is suggested to be changed to "the first metric and the second metric are the square".

Claim 8 is objected to because of the following informalities: in lines 1-2 the recitation "the first metric and the second metric is the absolute value" is improper because is not properly constructed; it is suggested to be changed to "the first metric and the second metric are the absolute value".

Claim 9 is objected to because of the following informalities: in lines 1-2 the recitation "the first metric and the second metric is the function" is improper because is not properly constructed; it is suggested to be changed to "the first metric and the second metric are the function".

Claim 27 is objected to because of the following informalities: in line 2 the recitation "the first metric and the second metric is the square" is improper because is not properly constructed; it is suggested to be changed to "the first metric and the second metric are the square".

Claim 28 is objected to because of the following informalities: in line 2 the recitation "the first metric and the second metric is the absolute value" is improper because is not properly constructed; it is suggested to be changed to "the first metric and the second metric are the absolute value".

Claim 29 is objected to because of the following informalities: in line 2 the recitation "the first metric and the second metric is the function" is improper because is not properly constructed; it is suggested to be changed to "the first metric and the second metric are the function".

Appropriate correction is required.

Claim Rejections - 35 USC § 112

The modifications to the claims were received on 01/29/2007. These modifications are accepted by the Examiner.

In view of the amendment filed 01/29/2007, the Examiner withdraws claims rejections under 35 USC § 112 first paragraph to claims 12-14 and 32-34 of the previous Office action.

Allowable Subject Matter

Claims 1-4, 6, 10-15, 16-27, and 30-40 are allowed.

Claims 7-9 and 27-29 are allowed if the above objections are overcome.

The following is an examiner's statement of reasons for allowance: claims 1-4, 6-24 and 26-40 are allowed because the references cited fail to teach, as applicant has, maximum likelihood decoding for obtaining original information by decoding a reproduced signal from a recording medium or a reproduced signal obtained through a transmission medium comprising a first-metric generating for generating a metric of a reproduced signal generated based on a first partial response, the metric being a first metric; a second-metric generating for generating a metric of a reproduced signal generated based on a second partial response, the metric being a second metric; and a maximum likelihood decoding for realizing maximum likelihood decoding by using the first metric and the second metric, where the second partial response is a differential partial response obtained by calculating a difference between the first partial response and a response generated by shifting the first partial response by 1 channel clock, as the applicant has claimed.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably

accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

a) Ohta (US 6724555 B2) discloses data detecting for equalizing an input signal reproduced from magnetic recording media by partial response by employing at least one of partial response class 4 (PR4) and extended partial response class 4 (EPR4), and decoding the input signal; the input signal is equalized by PR4, and a first equalized signal is obtained, first decoded data is obtained from the first equalized signal; the input signal is equalized by EPR4, and a second equalized signal is obtained; the second decoded data is obtained from the second equalized signal; from the first equalized signal and second equalized signal, the signal condition of the input signal is judged, and the optimum data detecting method is discriminated; thus, either the first decoded data or second decoded data is selected as detected data;

b) Reed (US 5961658 A) discloses control of storage systems for digital computers (such as magnetic and optical disk drives) using sampled amplitude read channel that employs PR4 equalization and an EPR4 remodulation/demodulation sequence detector;

c) Taguchi (US 20010021153 A1) discloses recovering data from a readout signal obtained from an optical storage medium to which the data is written at a high recording density;

d) Tonami (US 6445662 B1) discloses information reproducing apparatus including a waveform equalization circuit for processing a reproduced signal of a run-length-limited code;

e) Miyashita (US 6678230 B2) discloses a technique for equalizing waveform of signals read from recording medium such as optical discs; and

f) Fujiwara (US 20030026185 A1) discloses data defect detection using soft decision result.

This application is in condition for allowance except for the following formal matters:

See above.

Prosecution on the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

A shortened statutory period for reply to this action is set to expire **TWO MONTHS** from the mailing date of this letter.


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Juan A. Torres whose telephone number is 571-272-3119. The examiner can normally be reached on 8-6 M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mohammad Ghayour can be reached on 571-272-3021. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 2611

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Juan Alberto Torres
04-18-2007


STEPHEN GHEBRETINSAE
PRIMARY EXAMINER